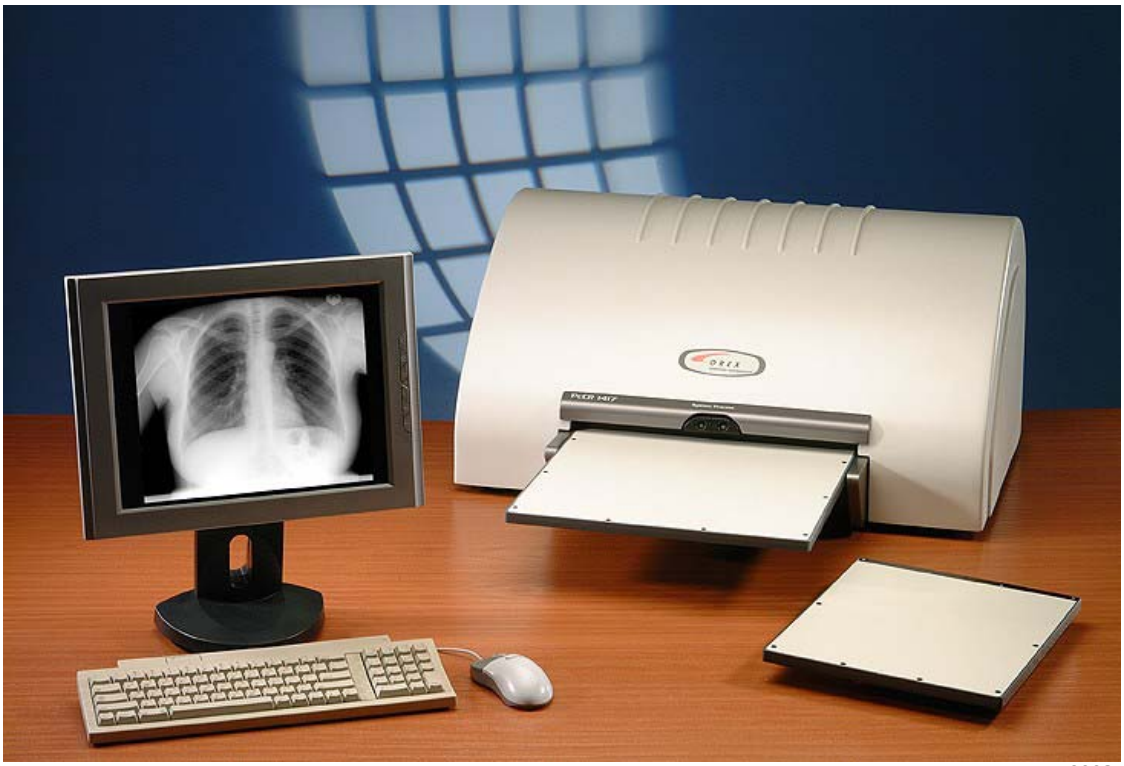
PcCR 1417

Scanner Interface Guide

Version 2.5.1.09



January 2003

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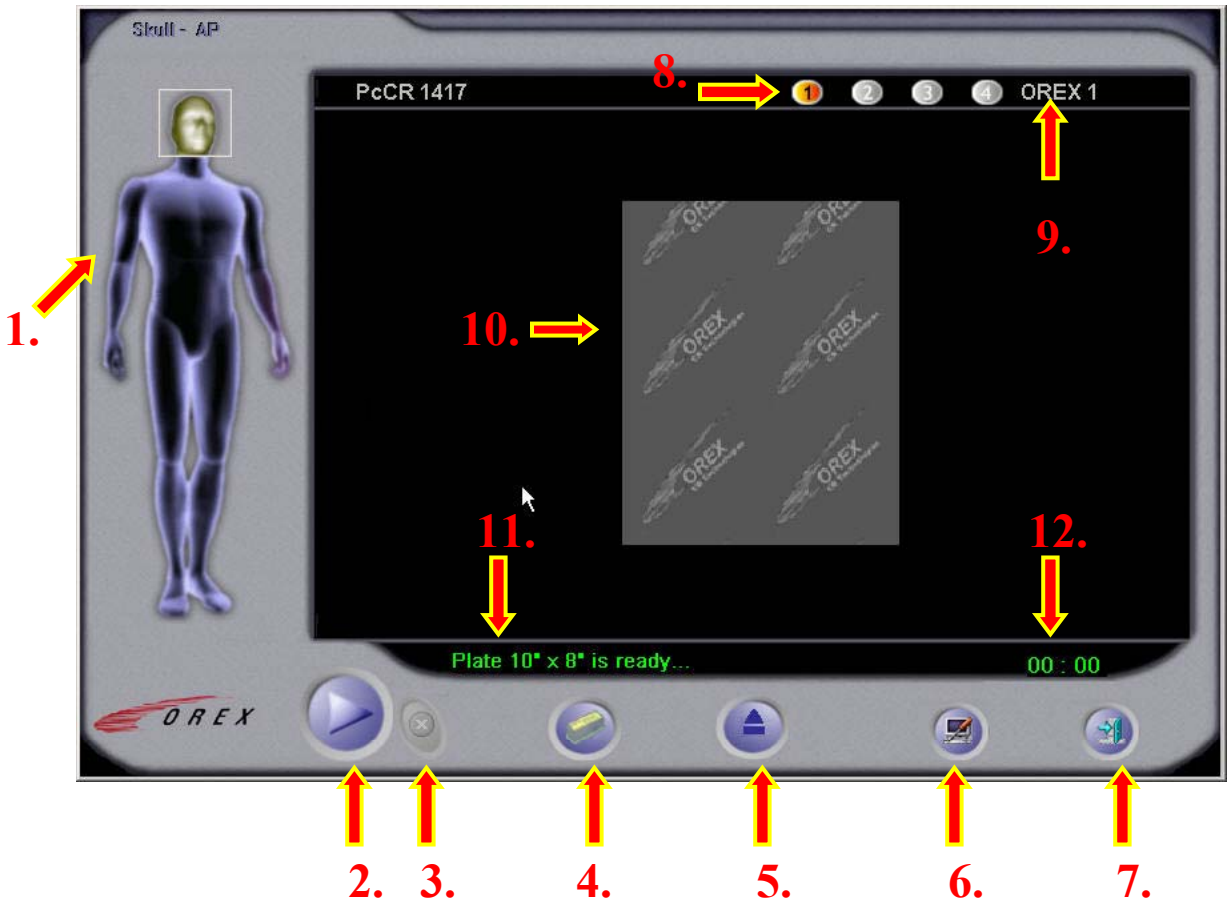
Technical Services: Dial "3" from main menu
Note: Before returning any materials, you will need to call for an **RA#** before shipping.

User Interface



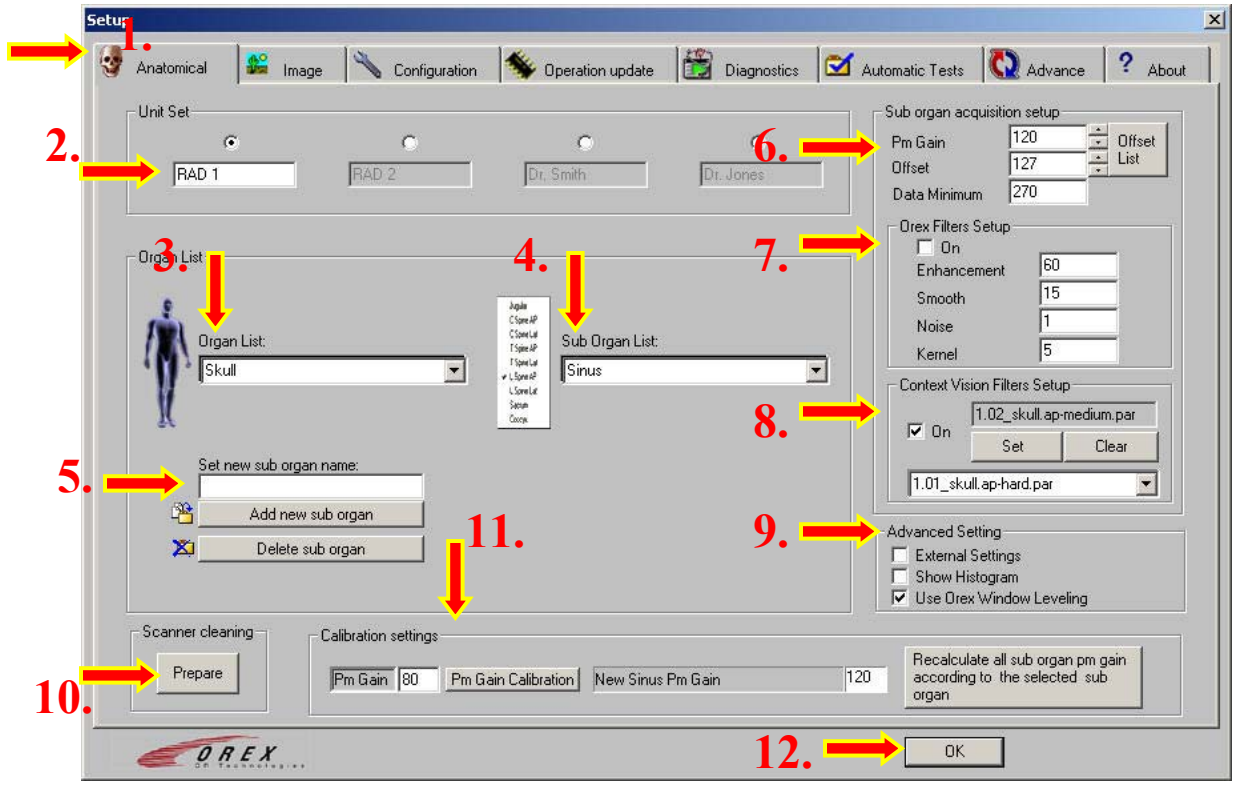
1. **Anatomical Selector:** Selects the region of the body to be imaged
2. **Scan:** Starts the scanning cycle.
3. **Stop:** Aborts the current operation in progress.
4. **Erase:** Allows user to manually perform an erase cycle on a plate/cassette.
5. **Eject:** Ejects the plate/cassette from the machine.
6. **Setup:** Enters the setup function of the software.
7. **Exit:** Exits the Scanner Interface Program.
8. **Configuration Selector:** Selects one of four (4) configurations.
9. **Configuration Name:** Shows the name of the currently selected configuration.
10. **Preview screen:** A preview of the image, as it is being scanned, is displayed here.

User Interface

11.Scanner status indicator: Provides feedback to the user on the state of the scanner.

12.Timer: Shows the time left for current operation.

Anatomical Screen



1. **Tab Select Region:** Clicking on the various tabs along the top row will bring up the corresponding set up screen.

2. **Unit Set:** Allows software to have four (4) different Anatomical Setups. This is defined as Organ, Sub organ, PM Gain, Offset and selected Filters. NOTE: The filters can be selected and saved, but not turned on/off using unit sets.

3. **Organ List:** Selects the major organ category for the current setup.

4. **Sub Organ List:** Selects Sub Organ category for the current setup.

5. **Set New Sub Organ Name:** This feature allows for a new Sub Organ category to be added to any Major Organ Category.

6. **Sub Organ Acquisition Setup:** This section is used to define the setup of each Sub Organ. PM Gain and Offset can be freely set at anytime. The grayed out values require using the "edit" button, which will prompt for a password. Following is a brief description of each feature.

Anatomical Screen

6. **Sub Organ Acquisition Setup:** CONT.
   - **Data Minimum:** Is a factor, which is used to enhance the window leveling of the image.
   - **PM Gain:** Photo-multiplier Gain is a factor which determines how much gain is applied to the signal received by the photo-multiplier.(Factory Set)
   - **Offset:** Offset is a factor, which is used to eliminate noise from the image. (Factory Set)

7. **Orex Filters Setup:** Check the "ON" box to use these filters. Three of these settings make up an "Unsharp Masking" filter, the remaining one is noise reduction.
   - **Enhancement:** One of three Unsharp Mask Parameters*. Smooth, Kernel and Enhancement are used together to define how the Unsharp Mask Filter will function. Enhancement can be set anywhere from 0 – 80.
   - **Smooth:** One of three Unsharp Mask Parameters*. Smooth, Kernel and Enhancement are used together to define how Unsharp Mask will function. Smooth can be set anywhere from 0 – 80.
   - **Noise:** This is a noise reduction filter. Noise can be set to either 0 or 1.
   - **Kernel:** One of three Unsharp Mask Parameters*. Smooth, Kernel and Enhancement are used together to define how Unsharp Mask will function. Kernel can be set to 3, 5 or 7.

8. **Context Vision Filters Setup:** Check the "On" box to use these filters. Filters (also know as GOP) are used for image enhancement.
   - **Grayed out Window:** This indicates which, if any, filter is currently selected.
     NOTE: Even if a filter is "selected", no filter will be applied if the "On" box is unchecked.
   - **"SET":** This button will select the current filter in the drop down window below. The filter will then be displayed in the grayed out window above.
   - **"CLEAR":** This button will remove the currently selected filter from the grayed out window, leaving no filter selected.
   - **Drop down window:** This window will show a list of available filters to select from.

9. **Advanced Setting:** Check the box to activate an option.
   - **External Settings:** This feature allows the use of an external program to select an Organ, Sub Organ and Scanning Resolution.

Anatomical Screen

9. Advanced Setting: CONT.

- **Show Histogram:** This feature will show a graphical Histogram after an image is scanned.
- **Use Orex Window Leveling:** This feature will allow the scanner Interface to determine the optimal Width and Center values for any scanned image.

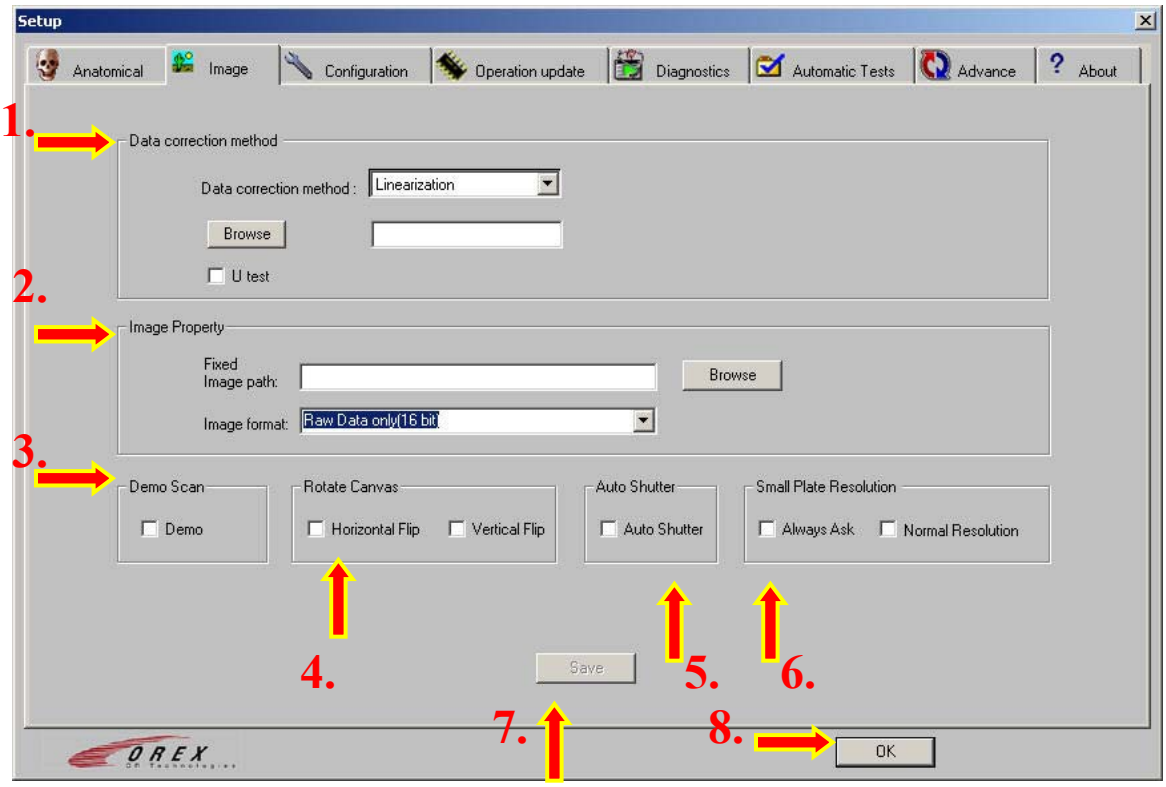
10. Scanner Cleaning: This function is used during the roller cleaning procedure.

- **"PREPARE":** This button is pressed prior to removing power from the scanner during the cleaning procedure. Please see user manual for complete instructions.

11. Calibration Settings: The Orex PcCR 1417 comes from the factory pre-calibrated. Only minor adjustments need to be made when the System is installed. Only Certified Orex technicians should make these adjustments.

12. OK: This Button will exit setup.

Image Screen



1. **Data Correction Method:** Linearization is used to correct a distortion in the phosphor plate's absorption of different energy levels. Choose this method for a more reliable image; otherwise choose "No Correction".

2. **Image Property:** This section defines the two important properties of the image to be scanned. They are described bellow.

   - **Fixed Image Path:** Defines the location for the Scanner Interface to place the image Data. This is also where the viewer will retrieve the information. The "Browse" button can be used to easily find this location.
   - **Image Format:** Allows the selection of three formats for storing the Data.
     - o Raw Data Only(16bit): This is the default format and should be used in all applications.
     - o Dent-A-View Image(16bit): This is a format which can only be used by specific software sets. Use this setting only when instructed by an Orex Technician.
     - o BMP(8bit): Use this format to store the image as a BitMap(8bit).

3. **Demo Scan:** This option will produce a quick demo scan. No exposure or plate is required when using this option. Very useful for setting up a system and checking data path.

Image Screen

4. **Rotate Canvas:** This option is used to change the orientation of the image as delivered to the viewer.

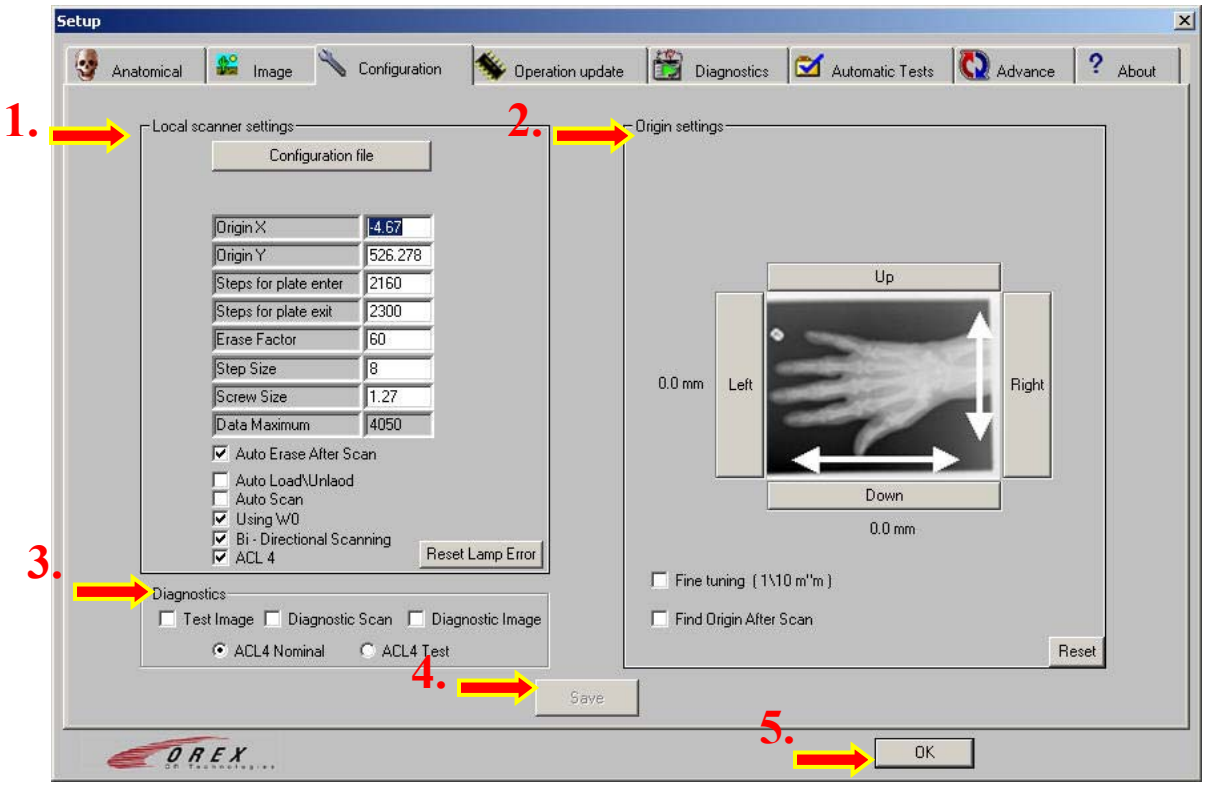
5. **Auto Shutter:** This option will apply an automatic shutter to the image to remove any unwanted white boarders from the image.

6. **Small Plate Resolution:** The 8" X 10" plate/cassette can be scanned in High Resolution. Selecting "Always Ask" will prompt the user to select "Normal Resolution" or "High Resolution" each time an 8" X 10" plate\cassette is loaded into the scanner. To set the unit for permanent high resolution, check the box next to "Normal Resolution" you will notice that "Normal Resolution" will immediately change to "High Resolution".
   Note: The "Always Ask" option will override the "Normal\High Resolution" option.

7. **Save:** The save button ***must*** be pressed in order for changes to take effect.

8. **OK:** This Button will exit setup.

Configuration Screen



1. **Local Scanner Settings:** This section is where several key scanner specific parameters are set. Following is a brief description of each.

   - **Configuration File:** This button will display the configuration file where this information is stored.
   - **OriginX:** Defines the start of the "X" Axis.
   - **OriginY:** Defines the start of the "Y" Axis.
   - **Steps for Plate Enter:** Defines travel of loader entering Cassette. (Factory Set, do not adjust)
   - **Steps for Plate Exit:** Defines travel of loader exiting cassette. (Factory Set, do not adjust)
   - **Erase Factor:** Defines the Erase time of the Unit.
   - **Step Size:** Defines the step size of the carriage motor. Currently, this should always be "8".
   - **Screw Size:** Defines the size of the "worm-gear" used for the carriage assembly. Currently, this should always be "1.27".
   - **Data Maximum:** Defines maximum gray level values to be included during the Linearization Process.

Configuration Screen

1. **Local Scanner Settings:** CONT.
   - **Auto Erase After Scan:** Check this box to enable Auto Erase.
   - **Auto Load\Unload:** This option is used in conjunction with the "automatic test" section of setup in order to automate the load/unload function of the scanner.
   - **Auto Scan:** Check this box to enable Auto Scan. Eliminates the need to press the scan button after the plate loads.
   - **Using WO:** Check this box if the scanner is equipped with a WO sensor.
   - **Bi-Directional Scanning:** This option will enable Bi-directional scanning. This option is only available on ACL4 systems and allows for faster scanning.
   - **ACL4:** Check this box if the scanner being used is an ACL4 system. (ACL4 is a system capable of scanning 40+ plates per hour).

2. **Origin Settings:** This section is used to adjust the "OriginX" and "OriginY" values from the "Local Scanner Settings" section. If the scanned image is being cut-off or seems to be out of the viewable area, this is where it can be corrected. By clicking on the left, right, up or down buttons, the image can be re-positioned, in millimeter increments, into the viewable area. Please note, the image on this screen will not actually move. The results will be seen on the next scan.
   - **Fine Tuning:** Check this box to make smaller increments with each click of the left, right, up and down buttons. ($1/10^{th}$ mm)
   - **Find Origin After Scan:** This is an automated feature for finding the Origin values. Check this box and return to the User Screen for instructions.
   - **Reset:** This button will load default values.

3. **Diagnostics:** In this section, there are two (2) diagnostic features, which can be accessed by any user.
   - **Test Image:** Check this box to produce a synthetic image when scanning. This will test most of the scanner functions and ensure that data is following the proper path. Note: The plate will NOT actually be scanned; you may lose any image that is stored on the plate.
   - **Diagnostic Scan:** Checking this box will enable the following information to be displayed while scanning.
     - **Track Counter:** Displays the current track being scanned on the vertical axis.
     - **Encoder Counter:** Displays the synchronized frequency of the rotational motor and the encoder. This value is normally 1000. Deviation from this value may indicate a problem with the encoder or it's reader.

Configuration Screen

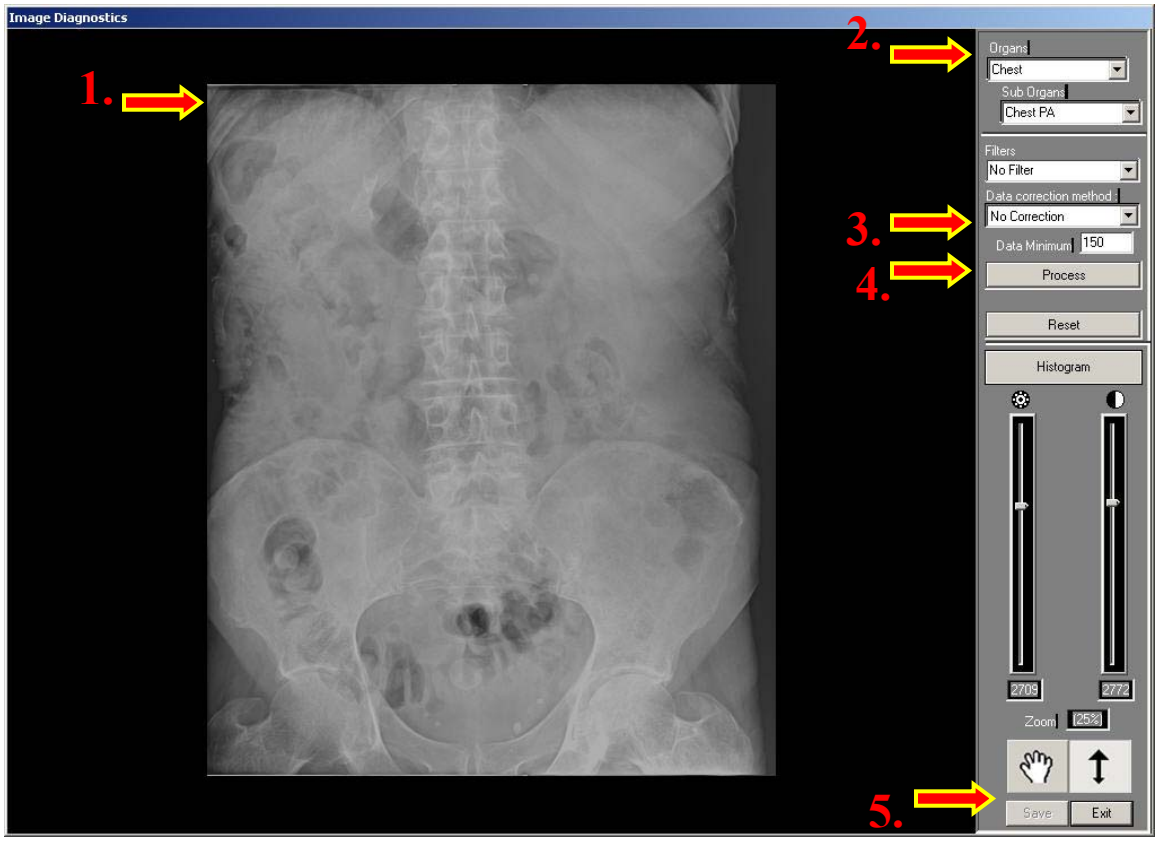
3. **Diagnostics:** CONT.
   - **Diagnostic Scan:** CONT.
     - **Pixel Counter:** Displays the number of samplings per track. Each pixel is sampled twice; therefore a value of 4500 would indicate 9000 samples.
   - **Diagnostic Image:** This will enable the "Diagnostic image mode". For complete details, see the following section, dedicated to this mode.
   - **ACL4 Nominal:** This radio button should be selected under normal operating conditions. NOTE: Even if the system is NOT an ACL4, this radio button will be selected.
   - **ACL4 Test:** This feature is used during the manufacturing process only. It should never be used in normal operation.

4. **Save:** The save button ***must*** be pressed in order for changes to take effect.

5. **OK:** This Button will exit setup.

Configuration Screen

Diagnostic Image Mode



This feature of the scanner interface was designed to assist the techncian and user determine which settings would be best to use, without the need for multiple exposures.
Following is a brief description of each function.

1. **Image preview:** A preview of the image is shown here.

2. **Anatomical Settings:** These settings correspond to settings found on the "Anatomical Screen".
   - **Organ:** Selects moajor organ category.
   - **Sub-Organ:** Selects Sub Organ category.
   - **Filters:** Selects the Context Vision filter (GOP) to be applied.

Configuration Screen

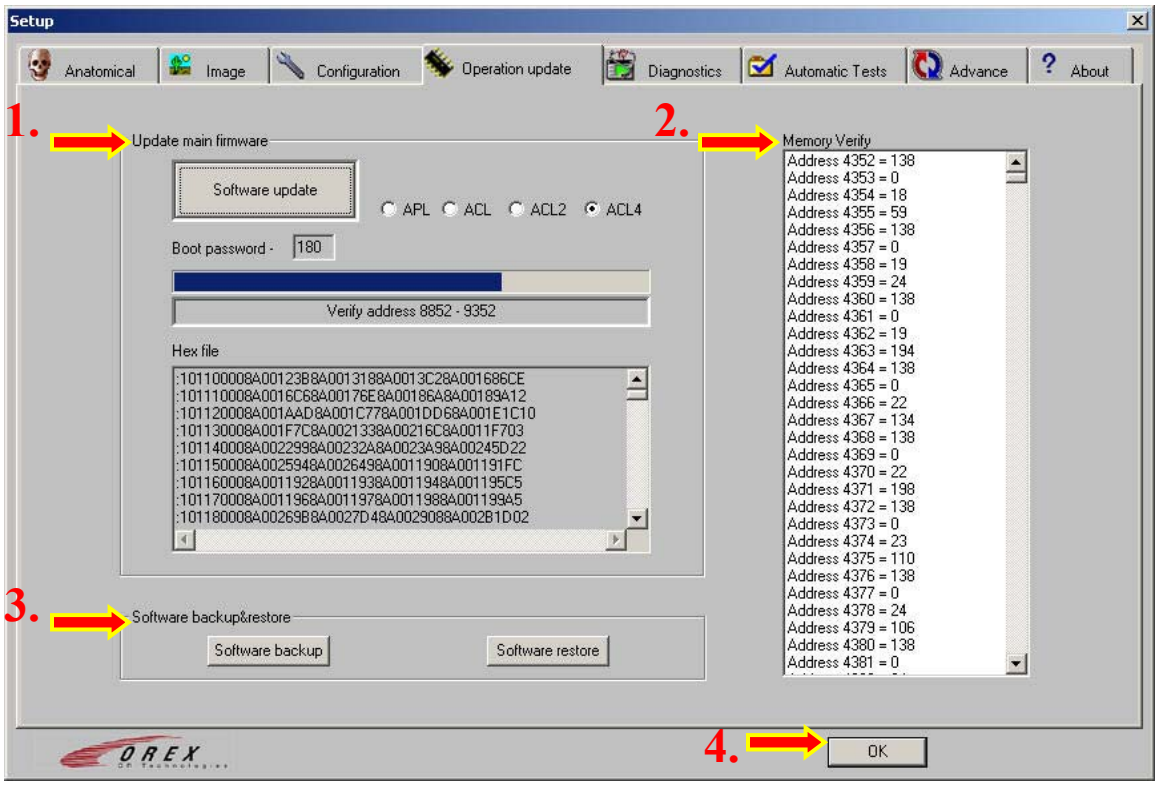
Diagnostic Image Mode

3. **Image Settings:** These settings correspond to settings found on the "Image Screen".
   - **Data Correction Method:** Allows selection of various methods of data correction. Linearization is the recommended method.
   - **Data Minimum:** Allows value to be manually entered. NOTE: If "No Correction" is selected, this value will have NO EFFECT.

4. **Application Controls:** This section contains the control buttons for this mode.
   - **Process:** This button applies all the current settings to the image. A progress bar will appear when activated.
   - **Reset:** This will reset all the data values of the image to their original values.
   - **Histogram:** This button will show the histogram for the currently showing image.
   - **Slide bars:** These bars indicate the current levels of the window leveling. Using the right mouse button while the cursor is over the image will allow the user to change the window levels.
   - **Zoom:** This window shows the current level of zoom applied to the image. Using the left mouse button while the cursor is over the image will allow the user to change the zoom level.
   - **Icons:** The "hand" and "double arrow" icons can be used for panning and zooming, respectively.

5. **Finish Controls:** These buttons are used when the final results have been achieved.
   - **Save:** This button will save all the current settings under the "anatomical Screen" for the selected organ and sub organ.
   - **Exit:** This button will exit the diagnostic image mode. The viewing software will continue operations from this point on.

Operation Update Screen



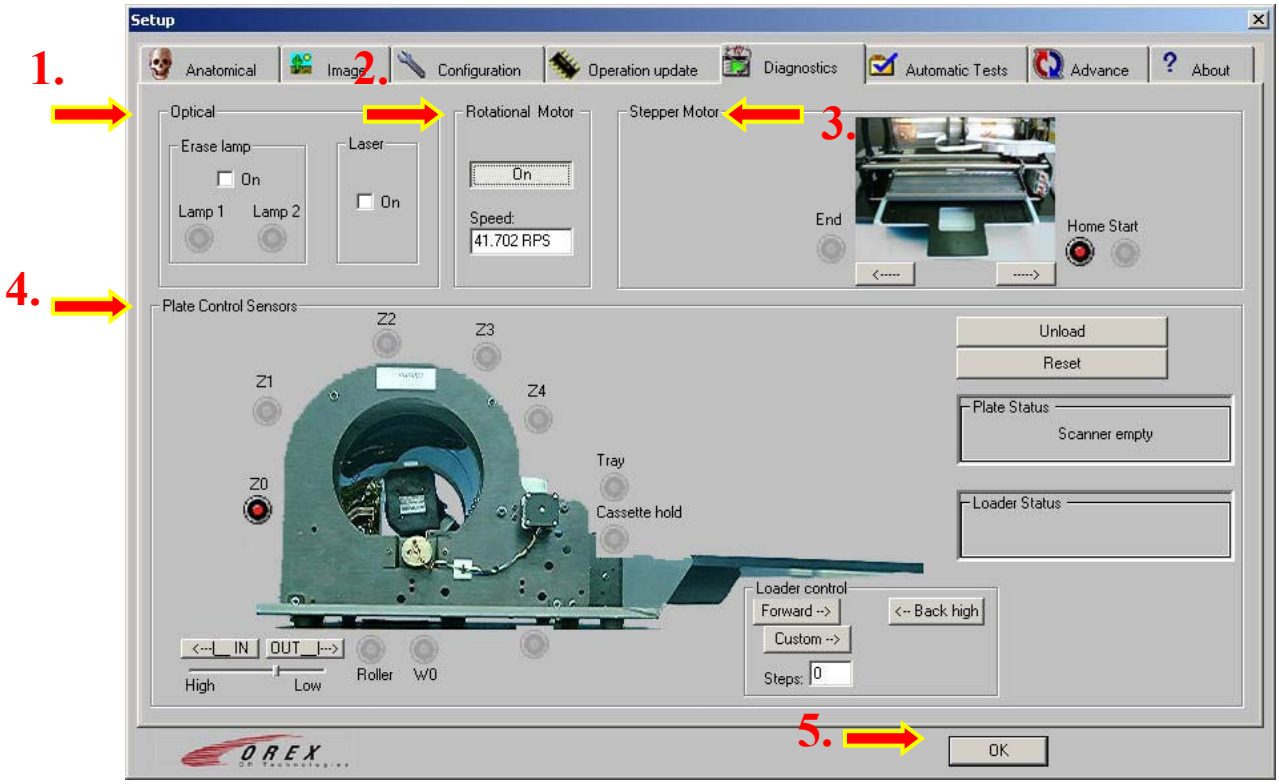
1. **Update Main Firmware:** This section is used to activate the Operation Update function.
   - **Software Update:** This button activates the software update sequence.
   - **APL/ACL/ACL2/ACL4:** Choose the appropriate radio button for the system being updated. NOTE: ACL4 is always selected as a default and DOES NOT indicate currently loaded software version. Check the "About Screen" to view currently loaded version. (#3. Firmware(operation)).
   - **Boot password:** This window indicates the boot password for the software being updated. This password MUST be correct for update to complete properly.
     - **APL/ACL/ACL2 = 120**
     - **ACL4 = 180**
   - **Progress Bar and Hex File:** These windows show the progress of the sequence.
2. **Memory verify:** This window shows the results of the sequence.

Operation Update Screen

3. **Software Backup & Restore:** This section allows the user to back up the software prior to an update in order to restore the previous version if needed.
   - **Software Backup:** This button allows the current operation version to be backed up simply by clicking this button.
   - **Software Restore:** This button allows a previous operation version to be restored. Click this button, and then click the "Software Update" button to execute the update program. This feature will only work if there was a previous version backed up. The current version can be verified under the "About" Tab. (#3. Firmware(operation)).

4. **OK:** This Button will exit setup.

Diagnostics Screen



1. **Optical:** This section allows for control of the optical components within the system.
   - **Erase Lamp:** Checking the "ON" box will light both lamps. Lamp1 and Lamp2 sensor indicators will show the status of the lamps. Sensor indicator will turn red to indicate a lit lamp.
   - **LASER:** Checking the "ON" box will turn the laser on. You must remove the cover of the system in order to verify the laser is ignited. The laser can be safely viewed from the side of the machine. CAUTION: LASER energy can cause severe damage to your eyes, DO NOT look directly into LASER light.

2. **Rotational Motor:** Pushing the "ON" button will start the rotational motor. The speed of the motor will be displayed in the window below.

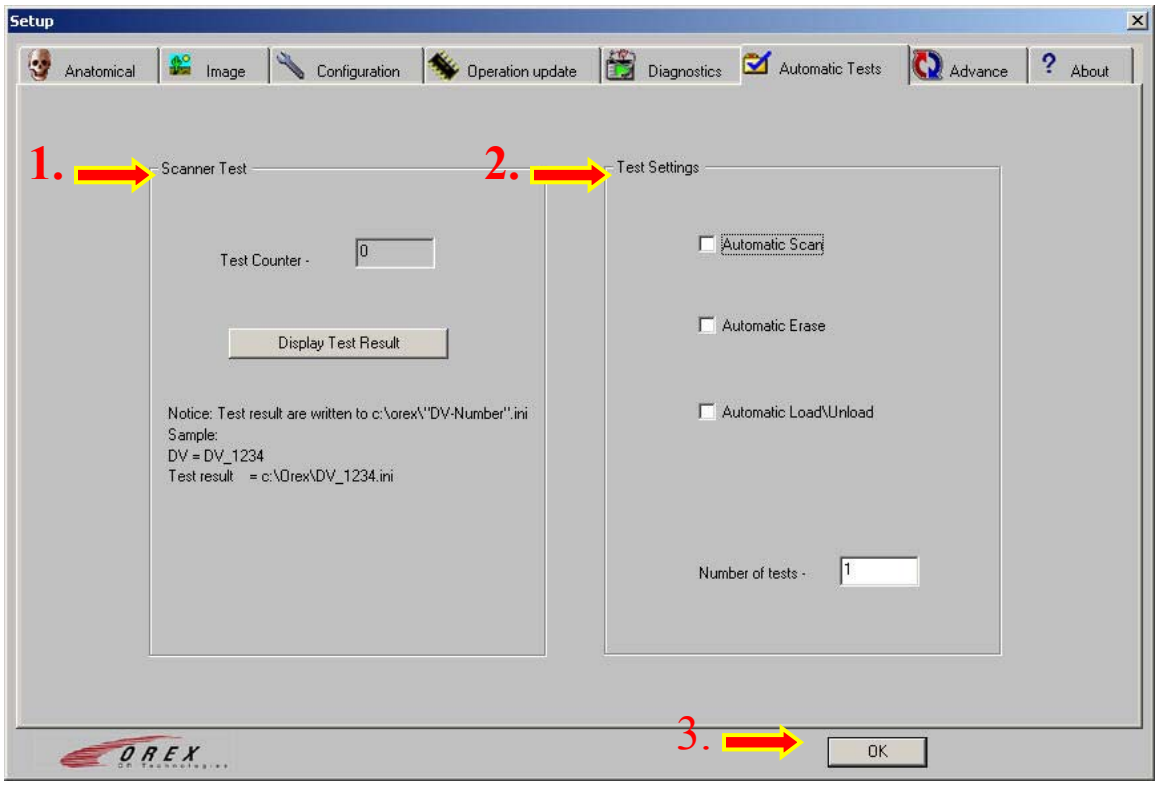
3. **Stepper Motor:** This section allows operation of the laser carriage assembly.
   - **Left/Right arrow buttons:** These buttons will start the motor moving in the direction of the arrow. Click once to start, once to stop.
   - **End/Home/Start:** Sensor indicators show the status of the laser carriage sensors. When system is initialized, only the "Home" sensor should be activated.

Diagnostics Screen

4. **Plate Control Sensors:** This section holds the controls and sensor indicators for the plate loading mechanics.
   - **Sensor Indicators:** Red indicates the sensor is activated. The diagram shows the approximate location of the sensor inside of the system. Following is a brief description of each.
     - **Z1 – Z4:** These sensors tell the system what size the plate is that has been loaded.
       - **Zo:** Home – No Plate loaded.
       - **Z1:** 8" X 10"
       - **Z2:** 10" X 12"
       - **Z3:** 14" X 14"
       - **Z4:** 14" X 17"
     - **Tray:** Senses that a cassette has been inserted and to begin the plate loading sequence.
     - **Cassette Hold:** Senses the cassette holding tab is secure.
     - **WO:** This sensor is located near the rollers. It senses when the plate is just about to exit the rollers and signals the rollers to slow down. This helps prevent damage to the plates.
     - **Roller:** Senses film inside rollers.
     - **Unlabeled Sensor:** This sensor indicates the position of the loader mechanism. Red indicates loader is in "ready" state.
   - **Buttons:** The buttons in this section have various functions. Below is a brief description of each.
     - **IN/OUT:** These buttons control the roller motor. Click once to turn motor on, once to turn off. In/Out indicates direction plate would be loaded. The slide bar beneath can be used to control the speed of the motor.
     - **Forward:** This is a loader motor control button. Click once to move loader to the forward position.
     - **Back High:** This is a loader motor control button. Click once to move loader to the back positon.
     - **Custom:** This is a loader control button. Enter a number of steps to perform in the window labeled "steps" and click the custom button. The loader will move the number of steps defined.
     - **Unload:** Click to unload a plate/cassette.
     - **Reset:** Click to reset the entire system.
   - **Windows:** The two windows, "Plate Status" and "Loader Status", will display various messages alerting you to the current conditions.

5. **OK:** This Button will exit setup.

Automatic Tests Screen



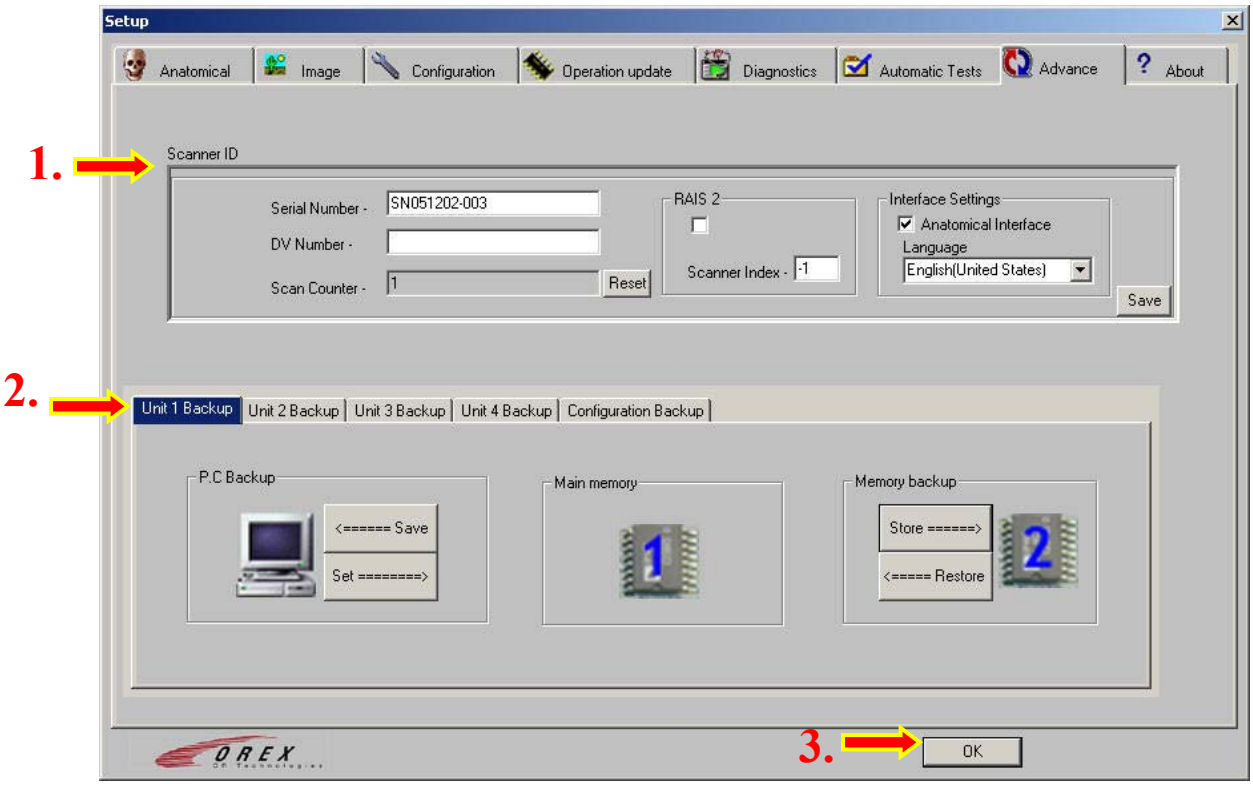
1. **Scanner Test:** This section holds the results of testing.
   - **Test Counter:** Displays the number of cycles completed.
   - **Display Test Result:** Opens the file where results are stored.

2. **Test Settings:** This section is where you set up the testing to be done.
   - **Automatic Scan:** Performs a complete scan cycle. Can be used along with "Test Image" setting under the Configuration Tab or with an unexposed plate.
   - **Automatic Erase:** Performs a complete Erase cycle.
   - **Automatic Load\Unload:** Performs a complete Load and Unload cycle.
   - **Number of Tests:** Set number of tests cycles to be performed.

   Note: The cassette must be manually re-inserted after each test cycle unless the "Auto Load/Unload" option is checked on the configuration screen.

3. **OK:** This Button will exit setup.

Advance Screen



1. **Scanner ID:** This section is used to input scanner identification numbers, RAIS 2 configuration and language selection. See below for a brief description of each.
   - **Serial Number:** Enter Serial Number here.
   - **DV Number:** Enter DV Number here. Note: Only older systems will have a DV#.
   - **Scan Counter:** Press the Reset button to set counter to "0".
   - **RAIS 2:** Configuration settings for a dual setup. Consult with Orex service for settings.
   - **Interface settings:**
     - o **Anatomical Interface:** Check this box to show the Anatomical Interface on the User Screen. (Figure of a person VS. Buttons)
     - o **Language:** There are currently two languages to choose from, English and Chinese.

2. **Unit/Configuration Backup:** This section allows each unit setup and the configuration of the system to be backed up.
   - **Tabs:** Select the appropriate Tab for the backup/restore operation you are performing.

Advance Screen

2. Unit/Configuration Backup: CONT.

- **PC Backup:** This backup/restore feature interacts with the PC.
    - o **Save:** Saves the current "Main Memory" to the PC.
    - o **Set:** Loads the current PC Backup to the "Main Memory".
- **Main Memory:** This is the "Main Memory". It is located inside the scanner and controls how the scanner operates. Any changes made to the settings are stored here, NOT on the PC. All Backup/Restore operations interact with this Memory location.
- **Memory Backup:** This Backup/Restore feature interacts with the "Main Memory" located inside the scanner. The location of this backup is also inside the scanner.
    - o **Store:** Saves the current "Main Memory" to a chip inside the scanner.
    - o **Restore:** Loads the current memory backup to the "main Memory".

Note: After the scanner is setup and operating according to the users needs, backups should be performed on all four Unit setups and the Configuration. This should be done on both the PC and the Memory Backup.

3. OK: This Button will exit setup.

About Screen

1. **Software Version:** This section displays the current version numbers of various system components. This is an important tool, remember to check this screen often.

2. **Scanner ID:** This section displays the Serial Number and DV Number, which is programmed into the scanner under the Advance Tab. The Scan Counter is also displayed here.

3. **OK:** This Button will exit setup.